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ABSTRACT

This paper, on the returns on investment (ROI) in training, introduces some practical examples for enterprises or organizations wanting to find out whether the money they have spent or intend to spend on training is necessary. It provides strategies for researchers who would like to undertake research in this area. The paper begins by examining what is meant by ROI and then focuses on what is meant by ROI in training. It borrows from the work of specific researchers and human resource consultants who have come up with systematic models for undertaking this type of evaluation and presents these models in a simple and easy to understand format. Some models for analyzing ROI and ROI in training have been around for a long time, but the principles they demonstrate are still very relevant today. Some step-by-step methods for calculating costs and benefits and simple explanations of the various concepts that underpin calculations of a figure for ROI in training are described. An annotated bibliography contains 29 abstracts of books and journals or magazine articles that deal with ROI in training. (YLB)

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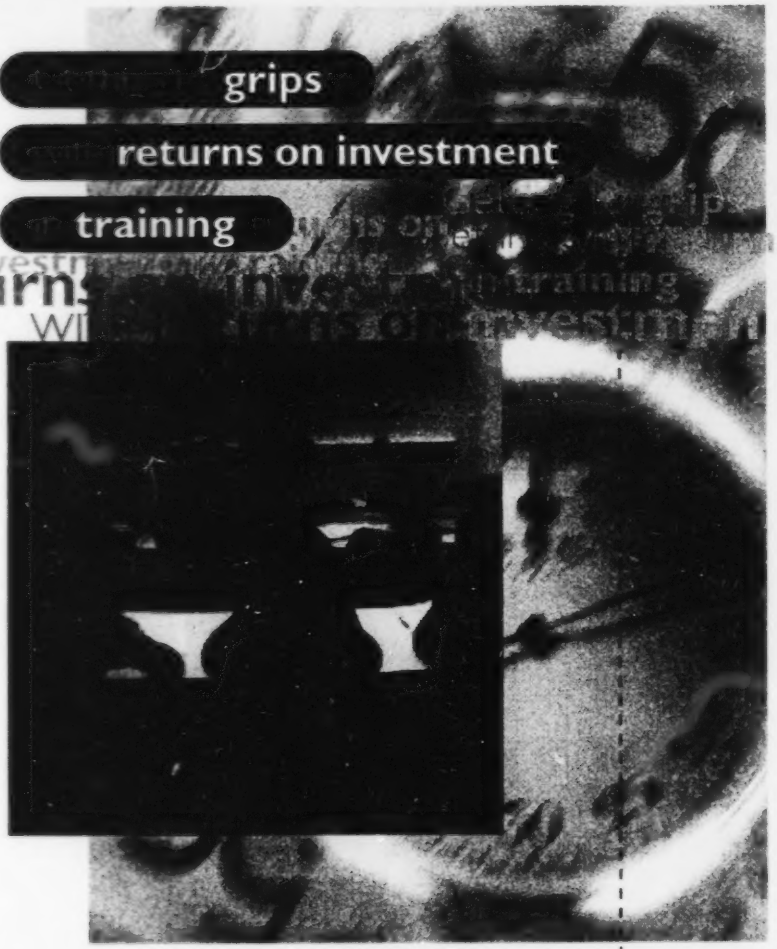

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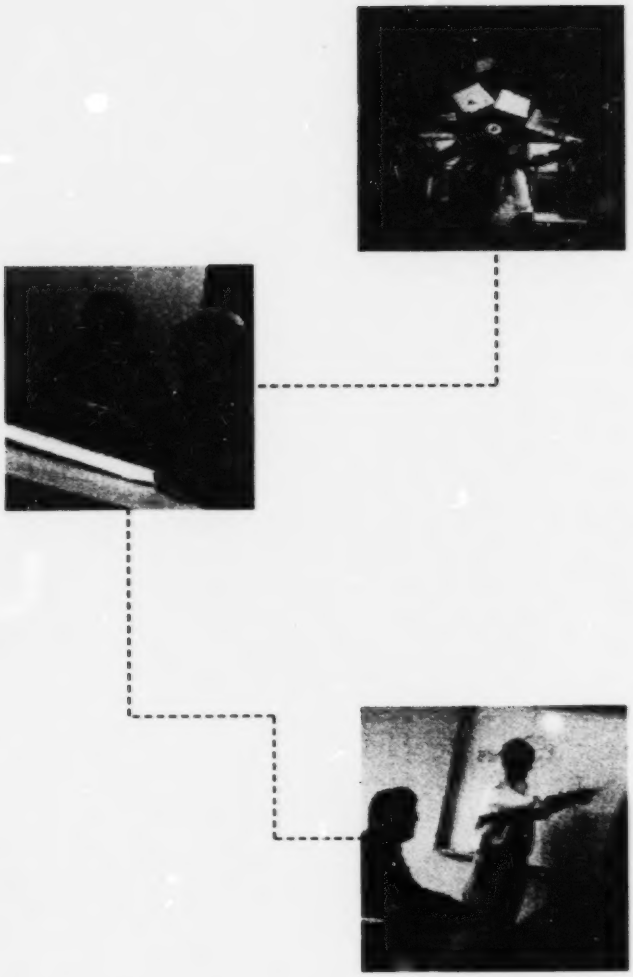

Preface

This book is about the returns on investment (ROI) in training. Its aim is to introduce some practical examples for enterprises or organisations wanting to find out whether the money they have spent or intend to spend on training is worth it. It also provides strategies for researchers who would like to undertake research in this particular area.

The book begins by examining what is meant by 'returns on investment' (any investment) and then focusses on what is meant by 'returns on investment in training'. It borrows from the work of specific researchers and human resource consultants who have come up with systematic models for undertaking this type of evaluation, and presents these models in a simple and easy to understand format. Some of these models for analysing ROI and ROI in training have been around for a long time. However, the principles they demonstrate are still very relevant today. They have been included in this book because they are easy to understand and to use.

In addition, the book also describes some step by step methods for calculating costs and benefits, and simple explanations of the various concepts that underpin calculations of a figure for 'return on investment in training'. Arriving at meaningful calculations of these returns, however, may not be as straightforward as it seems, and readers wanting to use these techniques for their own enterprises are also encouraged to seek advice from accountants or other financial experts.

Finally, the book provides an annotated bibliography derived from the Vocational Education and Training Research Database (VOCED). This bibliography is for readers who would like to do some further reading about the topic, and for those who would like to explore different techniques or approaches to calculating 'returns on investment in training'.

Getting to grips with returns on investment in training

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Returns on investments

When we speak about returns on investments (ROI) from some particular venture, we are generally referring to the gains that are derived by individuals, private organisations or government bodies making this investment. We are also talking about the benefits that accrue to communities or societies as a result of these investments. These benefits must be related directly to the results of the investment—that is, they are only derived because an investment in a particular venture has been made.

When individuals and private organisations stand to gain from a particular investment, we say that they have received a private return from the investment. When public organisations and communities stand to gain from a particular investment, we say that they have received a social return.

These returns or benefits may include gains that can be easily measured as well as those benefits that are more difficult to measure. Often those benefits which can be easily measured are those that can be observed and can claim to have a more or less direct relationship to the investment that has been made.

They may take the form of:

- increased productivity
- increased profits
- reduced downtime from machine breakdowns
- reduced injury rates

However, there are also benefits that cannot always be easily measured and may have an indirect relationship to the investment that has been made. We call these types of benefits intrinsic benefits or rewards. These may include:

- increased staff morale
- increased self-esteem among individuals

However, these are only considered to be benefits once all the costs related to producing them have been factored into the equation. For example, a government-derived benefit of investing in a major arts complex needs to factor into the equation a number of extrinsic and intrinsic costs. Extrinsic costs include all expenses that are incurred from the tendering and building processes. These may include the:

- cost of the land on which the complex will be built and all attendant stamp duties etc.
- salaries, wages and on-costs of all government personnel involved in the administration and overseeing of the project

Intrinsic costs may include:

- loss of public approval if the project is felt to be too costly
- increase in public disenchantment if the building site either disrupts normal traffic or is not considered to be attractive enough for the area
- possible decrease in votes at the next election for the party in power

In summary, ROIs are derived by individuals, enterprises, governments, or societies, either singly or in combination. They are considered only to provide returns when costs attached to them have also been considered and subtracted.

Returns on investment in training

ROI in training also includes a range of extrinsic and intrinsic factors that may be enjoyed by individuals, enterprises, governments, and societies, either independently or in combination. When deciding on the returns that attach to training investments, however, a range of training situations need consideration. These include formal training delivered by trained teachers or instructors in educational institutions; informal training delivered on the job by supervisors and work-mates, or off the job by in-house trainers; and training delivered by flexible formats (for example, on-line training and self-paced learning).

Individuals stand to gain a variety of external and internal benefits from being involved in training programs. This is true for enterprises, training providers, governments and societies. In all cases, these benefits need to be considered in terms of the costs that were incurred to produce them.

Why assess ROI in training?

One of the major reasons for assessing ROI in training is to decide whether the funds or effort involved has been worthwhile. Individuals want to know whether the time and money they have spent in pursuing a certain qualification or program of skills will deliver them higher income in the short or long term, or better opportunities for advancement. Enterprises want to know whether training has led to better workplace performance in terms of increased productivity, adaptation to technology, international or domestic competitiveness, and occupational health and safety. In addition, enterprises want to know whether their training has helped them to comply with any legislative requirements. Governments want to know whether their funding of training has helped them meet national qualification and skill targets and improved their economic competitiveness in global markets.

It is also important to understand that comparing dollars invested in training with dollars returned is not the whole story. One way to look at

this is to consider a program that has enabled a cost saving because it has been delivered in self-paced learning formats. Because the dollar costs for delivering the program are reduced, the dollar value of returns will be increased. However, if the learners have not learned the concepts adequately because they have not been able to access adequate and necessary assistance, then the effectiveness of the program is questionable.

Although the reasons for evaluating training are relatively straightforward, establishing the links between training activities and improved outcomes is more difficult. In the following chapters we examine different ways to go about conducting evaluations of training programs and deriving an indicator of the benefits in dollar terms of a certain program of training.

Getting to grips
with returns on investment in training

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The cost-benefit model

The Office of Training and Further Education (OTFE 1997) publication *Return on training investment: Development of enterprise frameworks* handbook for evaluators sets out a simple way for calculating ROI in training. This method is advised in cases where a dollar value can be applied to a cost or benefit.

Although this OTFE framework defines this ratio as an ROI, what it refers to is, in reality, a cost/benefit ratio. This ratio is calculated by identifying and quantifying all benefits and costs which are associated with a certain investment and using the following formula to arrive at the ratio.

Formula Cost/benefit ratio = Benefits/costs x 100

If the cost/benefit ratio is greater than 100, then it can be said that returns have exceeded costs. If the ratio is equal to 100, then costs are judged to have been recovered and the program is viewed as having *broken even* (p.47). If the ratio is less than 100 then the costs of training have exceeded the benefits and the training has not provided any 'dollar value returns'.

A practical example

Scenario: A financial services enterprise has recently implemented a training program for all of its 100 insurance agents. This training program aims to teach these agents how to improve their sales of life insurance policies to individuals between the ages of 20 and 25 years. Prior to the training program the company had sold a total of 2000 such policies, each with a premium value of $160 per client per annum. This means that prior to the training program the company had derived $320 000 worth of premiums from these sales.

After the training program, sales of these policies increased to 2250, each with a premium value of $160 per client per annum. This means that the benefits experienced by the company was $354 100 – $320 000, which comes to a total of $34 100.

However, the cost of the program needs to be factored in. These costs included trainer's fees of $2000 for a two-day program, learning materials costs of $20 for each participant, $200 rental for the training room, and $500 for the evaluation of the program. The costs totalled $4700.

The cost/benefit ratio in this case is (benefits/costs x 100) = $34 100/$4700 x 100 = 723.4.

This means that the training has been worthwhile in terms of dollar value returns.

The pre- and post-training model

Approaches to examining ROI in training using pre- and post-training measures can provide information on whether training has had any impact on work performance or attitudes. Two of the measures used are observations of performance by workplace supervisors, and participants' performance on specific tests. Feedback from workplace supervisors, and participant performance on specific tests, has the potential to provide the most valuable information of the effectiveness of training. However, this feedback is especially dependent on supervisors being able to devote sufficient time to observing and recording performance of individuals in reliable and valid ways, and the availability of specific tests. Even if supervisors were available to be involved in the assessment of changes in behaviour, the cost of their involvement, in terms of cost and of time away from normal routines, may also be expensive.

Horrigan (1979) believes that feedback from comparisons between training participants and training non-participants may be a more affordable option. For example, one could compare staff turnover data (voluntary and involuntary terminations) for individuals who have been involved in training programs with data of turnover for individuals who have not been involved in training. This approach is especially dependent on comprehensive record keeping with respect to staff turnover and training participation. Horrigan's pre- and post-training model is provided below.

The first step is to decide on the pre- and post-training measures to be used. In this case, we are going to compare training participants with training non-participants in terms of:

- employee turnover
- training dollars expended
- training dollars retained

The next step is to gather information on the numbers of employees who have participated in training and the numbers of employees who have left the company.

Let's imagine there are 600 employees in the company under investigation and that half of these have participated in five training sessions each at a cost of $100 per participant. Let's also imagine that after the training has been conducted, 30 of the employees who have participated in training have left the company, and 150 of those who have not participated in training have also left the company. As a percentage of turnover this means that a tenth of training participants

have left the company, and one-half of the training non-participants have left the company. This information can be taken to indicate that training does have an effect on employee turnover because the non-participant turnover is five times the turnover of participants. This information is described in table 1.

Table 1: Employee turnover for participants and non-participants in training

Participation	Participants	Non-participants
Total participants	300	
Terminating participants	30	
Percentage of turnover	10	
Total non-participants		300
Terminating non-participants		150
Percentage of turnover		50

Although this provides a simple method for making decisions about whether training participants are more likely to leave the company than non-training participants, the reasons such employees choose to leave the company may not be due to participation in training. There may be other factors that may be used to explain the differences.

Horrigan also examined information of employee turnover in terms of the costs of training for training participants retained with the company versus training participants who had left the company. He found that the overwhelming majority (90%) of trained employees was retained with the company, while a tenth of training participants left the company. This accords with the information in table 1, which shows a 10% turnover rate for the participants in training.

The financial utility model

The great majority of writers on ROI acknowledge the difficulty of making definite judgments about whether or not training programs have actually improved the 'bottom line' for companies. However, Godkewitsch (1987) uses what he calls a *financial utility model* to get some sense of the value to a company in monetary terms of implementing a training program. This model requires the ability to ascribe a measure to any given intervention or effect.

The formula used by Godkewitsch (1987, p.79) to calculate the financial utility to a company of implementing a training program is described below:

$F = N[(E \times M)] - C$, *where*

F = *financial utility*
N = *number of people in the training program*
E = *effect or outcome of the training program*
M = *financial value of the effect or outcome*
C = *financial cost per person of implementing the training program*

The formula for calculating financial utility can help us to determine the types of information that need to be gathered. Although it is relatively simple to gather information on the number of training participants and financial cost per person, it is more difficult to quantify effects of training and allocate a monetary value to this effect. Godkewitsch, however, provides us with a practical way of measuring these by using the concepts related to the normal distribution of scores.

This concept goes something like this. In any normal distribution you will find a lot of scores near or at the centre, and fewer scores at the lower end of the distribution or at the higher end of the distribution. In addition, we can describe scores in terms of the extent to which they are grouped together. This is called the standard deviation. In any normal distribution, 68% of the scores fall within one standard deviation from the mean or central point of the distribution.

We can use information of the distribution and the standard deviation to help us to determine the effects of the training program. First, we compare the distribution of scores on a given test (for example, results on a work satisfaction questionnaire, or standardised test for measuring, say, business writing skills) administered prior to and after the training program. We then compare how these scores are grouped for each of the distributions. If the groupings (standard deviations) have changed, then we can attribute the change to the effect of the training program.

According to Godkewitsch, the next step is to quantify these effects in monetary terms. A practical way for attributing a dollar value to the effect of the training is to think of this in terms of the standard deviation. For example, in order to attribute a dollar value to changes in work performance brought about by the training, Godkewitsch refers to a method first used by several industrial psychologists, including Wayne Cascio (University of Colorado at Denver), Frank Schmidt (United States Office of Personnel Management) and Jeff Weekly (University of Texas), to quantify job performance. This method places the value of the standard deviation of job performance at about 40% of annual salary. This means that an employee whose job performance is at one standard deviation below that of an average worker is judged to be of 40% less value than the average salary paid for that job. This worker is performing at the 15th percentile. If the worker's job performance is one standard deviation above that of an average worker, then he/she is judged to be of 40% more value than the average salary paid for that job. This worker is performing at the 85th percentile.

A practical example

Let's imagine the following scenario. *More Australians Covered* insurance company wants to know whether the management training programs that have been conducted for their supervisors during 2001 have changed supervisors' performance on the job. The company has decided to use the *financial utility* model to arrive at this decision.

This model requires information on the number of supervisors that have participated in the training program for the year, the average salary for the supervisors, and the average cost per person of the resources that were used. In addition, we need to gather information on the results obtained by supervisors on two tests of performance—one administered prior to the training program and the other administered after the training program was over.

There were 50 supervisors that participated in the programs, they had an average salary of $50 000, and the average per person cost of resources amounted to $5000. In comparing the distribution and standard deviation of scores on tests, we find that there has been a shift in the standard deviations of both distributions of scores. This shift is the effect size or the changes that have been produced by the training program. The size in standard deviations of this effect is .68.

As we have already noted, the formula for calculating the financial utility is

$$F = N\,[(E \times M)] - C$$

In allocating appropriate figures for each component of the equation we have the following calculation.

$$F = 50[(.68 \times .4 \times \$50\,000)] - \$5000) = \$430\,000$$

This means that the overall worth to the company of conducting this training program is $430 000, or $8600 per person.

This information, used for calculating the worth to the company of providing training to supervisors, enables the company to calculate the length of time it would take to recoup expenses incurred in conducting the training. The per person cost of the training would be divided by the gains that had been experienced.

$$\frac{\$5000}{(.68 \times .4 \times \$50\,000)} = .36 \text{ months}$$

We can also get a figure for ROI by subtracting the cost from the gain and dividing the result by the cost.

$$\frac{(.68 \times .4 \times 50\,000)}{\$5000} - \$5000 = 172$$

This calculation has given us a cost/benefit ratio of 172, which means that our training program has been highly successful because it has shown a 172 improvement in supervisors' skills—as measured by their results on standardised tests for measuring these skills.

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The net present value model

Another technique that can be used to evaluate investment in training is to calculate the net present value (NPV) of a particular investment. The NPV provides a method for comparing the value of money now with the value of money in the future, taking into account all the costs that are associated with that money. This means that the calculation includes the initial costs as well as benefits or profits that are to be derived in the future. A positive NPV means that the current investment is better than the alternative investment; a negative NPV means that the alternative investment or not borrowing is better.

Reviewing some basic concepts

Information for this section has been based on Samuel L Baker's (Baker 2000) 'Perils of the rate of return', a web-based economics interactive tutorial of the University of South Carolina's Norman J Arnold School of Public Health. Additional information has been drawn from a web-based publication on contract pricing of the USA Department of Defense (n.d.).

Time value of money

Before we discuss the NPV technique, it is important to understand the concept of the *time value of money*. This concept is based on the premise that a dollar to be paid or received today is worth more than one to be paid or received in the future. You can use this time value for money concept to help you decide on choosing the best value for your money when you are deciding on a training program.

For example, say that you are the accountant for a group of companies that want to train new supervisors, but they each have a very small amount of money to devote to training. It is your job to investigate where this training program can be bought. As a starting point the companies have decided that what is required is a commercial package which provides highly structured and easy to follow training.

After much consultation, you find that there is one package called *Interaction* being offered by two different companies—the *Supervisory Training Company* and the *Management Training Company*. However, before firms requiring training are able to buy learning materials or conduct training using this package they must seek accredited training for the individual who is going to conduct the program. In your

investigations you find that both training companies will deliver the accreditation program you want. However, their conditions of sale differ.

The cost of the course from both companies is $4000. However, the *Supervisory Training Company* requires the money to be paid up front, and the *Management Training Company* will let you have an interest free loan for one year. The going rate of interest is 10%, which means that if you buy the program from the *Management Training Company* you will save one year's worth of interest at 10% per annum. This means that it will still cost you $4000 in one year's time. However, if you buy the program from the *Supervisory Training Company*, it will cost you $4000 plus 10% interest added to the cost in one year's time, which comes to $4400 in one year's time. In this case the decision is straightforward. You will buy the lowest cost option, which will be the program from the *Management Training Company*.

However, imagine that the *Supervisory Training Company* calls you before you have decided where to buy the program and informs you that you can buy their program for $200 less than the original price already quoted. This means that it will cost you $3800. However, this option will still cost you $3800 at 10% in one year's time. This means that if you go with this option, the program will cost your company $4180 in one year's time. Even at this price, the *Supervisory Training Company's* program at $4000 in one year's time is the better option.

However, if you want to make the decision of whether to buy the program now, or to wait a while, you may like to determine the *present value* of each option.

If you invest the $3800 (the amount you would have to give to the *Supervisory Training Company*) at 10% per annum, it would be worth $4180 at the end of the first year. In this case, $3800 is the present value of $4180 one year from now when the interest rate is 10%. This means that there is no difference to you in buying the program now or in waiting for a year. However, if you invest the $4000 (that you would give to the *Management Training Company*) at 10% per annum, then you will have $4400 in one year's time—so, $4000 is the present value of $4400 in one year's time. In this case, it would be better for you to invest your $4000 and buy the program in one year's time. You could buy the program from the *Management Training Company* because selecting this alternative will also allow you to pay for learning resources that training participants will use in the training program. This is an example of the concept of value for money in action. We need to understand this if we are to use the NPV technique to help us to analyse ROI.

We can use the NPV analysis to determine ROI in training. This means that we will have to consider the costs associated with the investment and compare these to the future benefits that will be derived as a result of the investment. For example, income that would have been foregone during the training period, costs of courses, learning materials and other related expenses would have to be considered as costs. The dollar value of income that can be directly related to the qualification will represent future benefits.

In calculating the NPV for our investments in training we will need to use the following steps:

Step 1. Select the discount rate.

Step 2. Identify the costs and benefits to be considered in the analysis.

Step 3. Establish the timing of the costs and benefits.

Step 4. Calculate the NPV of each alternative.

Step 5. Select the offer with the best NPV.

(USA Department of Defense [n.d.], chapter 9, section 9.0)

For example, let's decide that our discount rate (the interest we would have earned if we would have invested our money in another place, or at which money could have been borrowed) will not change over the life of the investment.

The present value of any income amount = (Income amount) / (1 + discount rate) to the *a* power.

a is the number of years into the future that the income amount will be received (or spent if the income amount is negative).

The NPV is the sum of these present values of the individual amounts.

To calculate the NPV we can use the following formula:

$$NPV = I_0 + \frac{I_1}{1+r} + \frac{I_2}{(1+r)^2} + \ldots + \frac{I_n}{(1+r)^n}$$

(I = income amounts for each year, the subscripts are the year numbers, starting with 0. The discount rate is *r*. The number of years of the duration of the investment is *n*.)

Factors affecting NPV

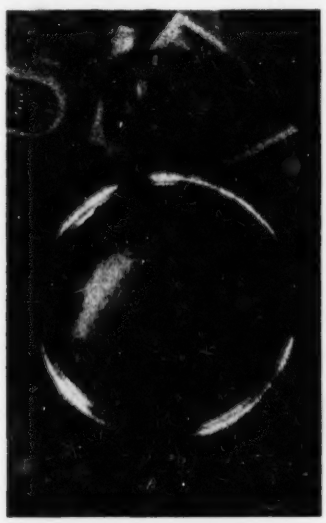
The major factors that will affect the NPV are the timing of the expenditure and the discount rate. The higher the discount (interest) rate, the lower is the present value of an expenditure at a specific time in the future. If $4000 is the present value of $4400 in one year's time at an interest rate of 10%, this present value would be lower if the interest rate were doubled.

Another factor that will affect the NPV is the decay of knowledge and skills over time. An estimate of this depreciation will also have to be factored into the identification of costs and benefits.

Estimating the opportunity costs (for example, the value of foregone wages, or other benefits) needs also to be considered. These costs are not always easy to measure and are often based on estimates by knowledgeable people in your organisation.

On the next page is a practical example of using the NPV analysis to conduct evaluations of the ROI in training. (The figures and calculations used in this example have been based on OTFE 1997, p.50.)

According to OTFE (1997), these results show that the investment in the training program was worthwhile and returned internal rates of return ranging from 35% to 150%.



A practical example

Keeping in mind that NPV is the future value of the program in today's dollars, we can calculate the NPV of a training program to decide whether it is a worthwhile investment.

If we wanted to use NPV analysis in determining whether or not our company should invest in a particular training program, the first thing we would have to do is to identify a discount rate that will be used. For the purposes of this exercise we will use differentiated discount rates. These rates will be set at 10%, 20%, 25%, 35% and 150%. One reason for changing the discounted rate is to ascertain how different rates of discount affect differences in performance.

The next step is to identify the costs or benefits associated with the program. There are two types of benefits or conditions; one relates to a 10% increase in competence, the other relates to a 3.3% increase in competence.

The timing of the costs and benefits should be the next to be described. In this example a three-year time period is used.

The NPVs for the conditions are derived using the NPV formula already discussed. These values are presented in table 2.

Table 2: **NPV calculated at 10% and 3.3% increase in competence, for different discount rates**

Discount rate %	NPV at 10% increase in competence $	NPV at 3.3% increase in competence $
10	31 312	4 537
20	24 933	2 253
25	22 346	1 330
35	18 063	(196)
150	275	

Source: OTFE 1997, p.50

Using the NPV analysis provides one way of estimating ROI in training. However, it does not take account of a variety of factors which may affect the outcomes that are required. Doucouliagos and Sgro (2000) have come up with an integrated approach to evaluating ROI in training. This approach considers the multi-dimensionality of the influences on training outcomes.

Doucouliagas and Sgro (2000) have integrated various methods for calculating the ROI on training. Their model, which is summarised in the following pages, comprises four major steps.

The first step comprises the data collection stage, and identifies the various types of data that may be collected to provide information for the ROI on training analysis. The second step deals with a pre-and post-training approach. The third step provides information of multi-variate analysis techniques. The fourth step deals with the cost–benefit analysis that is undertaken. It also explores the use of other types of advanced statistical techniques.

Calculating the ROI in training: The Doucouliagos and Sgro model

Step 1—Collecting the relevant qualitative and quantitative data

This includes collecting information on the measures of performance that will be used, the measures of training, direct and indirect costs of training, and the benefits arising from the training. These data can be collected over a period of time or at a point in time. In their evaluation of the ROI in training Doucouliagos and Sgro used time series data—say, data collected on accidents on a monthly basis for a number of years. Matched-pairs data on behaviour or performance pre- and post-training programs were collected for individuals or groups of individuals.

Performance measures

For example, in evaluating a training program for train drivers, performance measures used included fuel usage, time taken to drive a train, and train handling. In evaluating a training program for operators in photographic companies, these measures included spool productivity, staff turnover, sales, agency costs, and productivity.

Training measures

These include direct measures, like actual dollars spent in setting up the training program, and use of dummy variables as proxies for the training. Using actual dollars spent in establishing and implementing the training program can be used as a means of reflecting the influence of the training program. A dummy variable takes on the values of 0 and 1. A zero may describe periods during the program where there was no

training, and 1 may denote periods during the program where there was limited training. These dummy variables can be used in the multivariate analysis to identify their impact on training outcomes. In addition, indicators of behavioural change can also be used to reflect the impact of training.

Direct and indirect training costs

Data on the costs associated with training are used to work out the impact of training on profits. Direct costs may include production and supply of learning materials, travel costs, accommodation costs, administrative costs, software, costs for training delivery, and costs of trainee wages and salaries. Indirect costs include opportunity costs of time and foregone output.

Benefits

Benefits may include additional sales revenue, improved productivity, reduced costs, reduced staff turnover, reduced workcover premiums, and reduced equipment downtime.

Step 2—Comparing pre- and post-training performance/behaviour

The data that is collected in step 1 is then used to compare the pre-training program performance with the post-training program performance. In this process, the evaluation investigates whether there has been a positive or negative change in performance. In the case of the train drivers, this might be looking at the *direction* of the change—that is, whether more or less fuel has been used once the train drivers have been through their training program. In addition, this step involves examining the *magnitude* of the change—that is, how large or small have been the changes in fuel usage. It also involves examining whether the changes are *statistically significant*—that is, whether or not any changes in fuel usage have arisen purely from chance, or whether it can be inferred that they are the result of the training program. This component of the evaluation also investigates whether the change is *economically significant*—that is, whether or not the dollar value of the change in performance or behaviour is large enough to be of any importance to the company.

The tests used to test for significance relate to whether or not the exact distribution of the variables involved in the test is known. Where this

distribution is known, we can use parametric tests; where this distribution is not known, we can use non-parametric tests.

Step 3—Exploring the impact of other interventions on changes in performance or behaviour through multi-variate analysis techniques

This part of the technique helps to determine whether the benefits identified result from the training program, or whether other influences have had a major impact on producing the changes in performance or behaviour observed. This type of analysis tries to take into account the multi-dimensional influences on any dependent variable (in this case, the dependent variable is the rate of ROI in training). Multi-variate analysis also helps evaluators to decide which variable among a set of explanatory or independent variables has the most effect on the dependent variable. It also helps evaluators to determine the extent of each variable's impact on the dependent variable.

This analysis and step in the ROI process is highly recommended by Doucouliagos and Sgro; however, they note that it is sometimes difficult to obtain all the necessary data required to make the analysis a meaningful one. As well as difficulties in accessing the necessary data on certain explanatory variables, it is also important to understand that some of the variables may also be difficult to measure. In these cases, dummy variables (as already noted) can be used to indicate the presence or otherwise of a certain variable.

Step 4—Calculating the ROI

Cost–benefit analysis

As has already been discussed, the aim of the cost–benefit analysis is to assign a monetary value to the costs and benefits of the training program and to arrive at a cost–benefit ratio. However, it is important that only the relevant costs and benefits are considered and that the analysis also takes into account the distribution of benefits over time.

In addition, the cost–benefit ratio can also be an estimate of the impact of a particular training event. The degree to which it is an estimate of returns depends on the quality of the data that are used to calculate this ratio.

Using advanced statistical techniques

Doucouliagos and Sgro also discuss the use of more advanced statistical techniques which can be used to evaluate returns on training investments. These advanced techniques are used when organisations want to know whether a particular training program is not merely associated with a particular return but whether it actually caused the return to be derived. Granger causality analysis, which is applied to time-series data, allows these types of judgments to be made.

Other econometric techniques, like cost and production functions, data envelopment analysis and stochastic production frontiers, can also be used to investigate whether the relationship between inputs (for example, training investments) and outputs (returns on these investments) has been changed as a result of the training. However, these techniques require considerable amounts of data.

The value of a multi-dimensional approach to determining ROI in training

The most important value of this approach is that it allows certain evaluations to be made at the completion of each step. For example, the pre- and post-training analysis (step 2) allows the researcher to measure the direction and the magnitude of changes in performance. The multivariate analysis in step 3 allows the researcher to identify which variables are explaining variation in the dependent variable. The cost–benefit analysis then allows the researcher to determine in monetary terms the impact of the training program.

Making the right prediction

The most important analysis of training's ROI occurs before a training program is offered—not after it is over (Hassett 1992, p.55).

In making this statement, Hassett is well aware that the most important step in any business plan is to identify the right critical actions that will lead to business success. This means that making the right predictions of what training to invest in prior to the investment being made is the best activity that human resource personnel should undertake.

In addition, it is also important for those who are responsible for allocating budgets that they do not lose sight of the fact that 'many interrelated factors affect profit and loss; . . . and that . . . training is just one . . . of these factors' (Hassett 1992, p.54).

To help companies come up with the right prediction of what training will be required, Hassett has developed a four-part model for training investment analysis. This model incorporates principles involved in general-needs analysis, information gathering, analysis, and dissemination of results.

Hassett has adhered to the KISS (Keep it Simple, Stupid) principle for undertaking evaluations. His reasons for advocating a simple model (for example, one that does not compromise control groups, before and after testing, and multi-variate analyses) for deciding which training investments should be made in the first place are because of his belief that such a streamlined process will make it more simple for managers, or their equivalents, to 'focus on the bottom line when it matters most'—that is, when they are planning their training. The different phases for calculating these returns proposed by Hassett include the following:

- Determine the information required by your organisation.
- Find out and remember to use the same financial terms and calculations of costs and benefits used by financial departments in your company.
- Access any investment evaluation reports that have been prepared by other departments.
- If the organisation requires a complex analysis for calculating costs and benefits, then access information on these and use them. If the organisation does not require such analysis, then ignore these and adopt a more simple method.

- Use the easiest and least costly method possible for locating needed information.
- Use the 'Training Investment Worksheet (TIW)' to provide the structure you need for calculating the ROI of your training program. Complete Part 1 before going on to Part 2. Part 1 comprises options A and B. Use Option A where it is possible to assign a number to each item. If this is difficult to do then Option B should be used.
- Option A or B can be used to evaluate the effects of a past training program as well as to predict the effects of a new one. They can also be used to identify a range of possible effects ranging from low returns to high returns. The TIW requires factual information (for example, number of employees and number of sales) and information on which an informed estimate must be made (for example, number of errors avoided by employees as a result of training). Wherever possible, those who will be making ultimate decisions with regard to training budgets should be included in the estimation of benefits or costs.
- Analyse the figures as quickly as possible.
- Remember that the training investment analysis is meant to provide a quick and easy approach to evaluating returns on training investments in situations where money and time are restricted. This analysis is focussed on those components of a training program that are felt to have most impact on profits or losses and then allows managers to make an informed estimate.
- Publish and disseminate the results. It is important to publish the results of your evaluation quickly whether they provide evidence of positive or negative returns.

Before one can undertake this analysis, or any of the other analyses we have described thus far, it is important to identify benefits (returns) and costs. It is also important to consider the various ways that these can be measured so that they can be used in any evaluation. What follows is a practical example of Hassett's training investment analysis worksheet.

TRAINING INVESTMENT ANALYSIS WORK SHEET

Objective: _____

_____

Audience: _____

Returns measured over: _____ One year _____ Other _____

PART 1: CALCULATING THE REVENUE PRODUCED BY TRAINING

Option A: Itemised analysis

Increased sales:	_____	Additional sales per employee
	x _____	Revenues (or margin) per sale
	x _____	Number of employees
	= _____	Revenue produced by training
Higher productivity:	_____	Percent increase in productivity
	x _____	Cost per employee (salary + benefits + overheads)
	x _____	Number of employees
	= _____	Revenue produced by training
Reduced errors:	_____	Average cost per error
	x _____	Number of errors avoided per employee
	x _____	Number of employees
	= _____	Revenue produced by training
Client retention:	_____	Average revenue per client
	x _____	Number of clients retained
	= _____	Revenue produced by training
Employee retention:	_____	Average cost of new employee *(training + lost productivity)*
	x _____	Number of employees retained
	= _____	Revenue produced by training
Other:	_____	_____

Total revenue produced by training: $_____

Option B: Summary analysis

_____	–	_____	=	_____
Revenue after training		Revenue without training		Revenue produced by training

PART 2: CALCULATING THE RETURN

_____	–	_____	=	_____
Revenue produced by training		Cost of training		Total return on training investment

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Deciding on the **'right' training**

In deciding any benefits from an investment in training, whether it be in terms of extrinsic benefits or intrinsic benefits, Hassett (1992) reminds us to consider the relevance of these benefits before any training program is put in place. According to Hassett, training programs or training policies may be successful in providing participants with skills and knowledge that were originally intended. However, if these skills and knowledge are no longer relevant, the acquisition of these skills, although an indication of the success of the program, cannot be considered to provide a worthwhile return on the training investment.

For example, a small publishing company *Newpubs* has recently commenced business and hired workers to work in its publications department. Although each worker has expert knowledge of a specific word-processing software package, there is little consistency among them. The company wants to establish consistency of presentation and, so, it mounts a training program, at considerable cost, for this purpose. The word-processing package selected is called *Write Perfection*, because at least three of the ten new employees have worked with the package before, and because the company has been able to get a special deal on the training required. This was an important consideration for the company because, as a small business just starting out, it had little funds to devote to training.

The training program was completed and the learners acquired all the relevant skills required to work with this package. In addition, they had enjoyed the training program and had learnt new skills. Consistency of publication formats was also achieved.

However, managers had ignored one important issue. That is, they had not identified that the most common software program being used by the majority of authors was the *MacroWrite Words* software package. Although *Newpubs* was able to convert *MacroWrite Words* documents to *Write Perfection*, this took a lot of extra time, and in some instances material needed considerable re-working.

This training program was efficient but not effective. It successfully imparted skills and knowledge relating to a particular software package, but it was not effective because the software package that was identified for training was not the right package. In this case, training had been done right, but the right training had not been done. The program had not been worthwhile in the long run because it had taught the skills relating to a package that was no longer commonly used.

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Other **influences on ROI** in training

Unrelated events

In calculating any ROI in training it is important to be aware of the influence on the *bottom line* of events which have nothing to do with the training that has been implemented but have a major impact on the profits and losses of a company. Take the case of a major hotel chain that conducts regular reviews of the service available to customers. After one of these review periods, the manager of one hotel in the chain *Hotel X* decides that in order to attract customers the hotel must focus on updating the customer service skills of its employees. A training program is developed, and all employees are trained in the finer points of meeting customer needs. At the end of the training period an evaluation of the program is done. Skills are learnt, applied and, indeed, seem to make an impact on customers coming through the door. The results on the customer service forms show a definite improvement. However, at the same time sales of accommodation packages for *Hotel X* take a tumble and, as a result, there are less profits available from increased sales. Had *Hotel X* managers been mistaken about the effectiveness of the customer training service program that had been conducted prior to their slump in sales?

The answer to this question is not straightforward. What hotel managers had not foreseen was the aggressive marketing of cut price and very affordable accommodation packages provided by another local hotel servicing the same region. This had reduced the number of customers applying to come to *Hotel X*. The success or otherwise of the training program had nothing to do with this outcome.

Individual differences

Performance in particular training activities is often influenced by the natural physical and intellectual abilities of participants in the training programs, and their prior familiarity and achievements in other similar activities. In addition, it is possible that a particular cohort of students does very well in a particular training program at a particular time, and that another cohort of students undertaking the same training program does not do as well. There may be reasons for this.

The first group may have a strong *esprit de corps*, and it is this team feeling that motivates all members of the group to do well and leads to training program success. It may also be that all members of the group have high levels of mental acuity or intelligence, and it is the combination of all these abilities that helps the group to do well in training activities. Social scientists have found that these characteristics of groups have been associated with increased ability of the group to solve problems. It may also be that more members of the group have experienced related activities in the past and can share this information with the rest of the group. The second group may not do as well because these characteristics are not present or, if present, they are not widespread within the group.

When we are trying to evaluate the worth of a particular training program, it is important that we control for these particular influences. It is for this reason that psychologists are keen to establish control studies when trying to explain the reasons for a particular result.

Choosing the **right method**

The method for calculating ROI in training may not suit all companies in the same way. In choosing the method for determining the ROI in training, companies may need to decide whether or not the cost or effort involved in using a certain approach is worth it.

A key factor in helping make this decision is the extent to which the enterprise requires such a calculation to be made. For example, it may be that the company has made a corporate decision to support training whether or not observable returns result from the training. The training manager or human resources professional in this situation is under no obligation to demonstrate that training results in the application of skills on the job or that it is contributing to reduced injuries or errors. In this instance, the best option is to use a quick, easy and inexpensive approach to assessing the value of the program. One such approach would be to ask participants to provide responses to a set of pre-determined questions about the relevance and effectiveness of the training. These responses can help the training manager decide whether to continue a certain delivery strategy or to adapt the content so that it reflects the skills and knowledge that are relevant to participants and their supervisors.

In contrast, another company may decide to make training one of its major methods for achieving a corporate objective aimed at decreasing wastage rates in the production of circuit boards. Here it is important that a different level of analysis of ROI in training is used. It is not only enough to gather participants' reactions to the delivery of a training program. It is also important to see how skills that are learnt in training transfer to on-the-job applications. The best method in this case is an integrated or multi-dimensional method that combines quantitative and qualitative approaches and includes pre- and post-training evaluation, cost–benefit ratios, and multi-variate analyses. This is because it allows the consideration of many of the factors that impact on training outcomes.

Concluding remarks

In this book we have provided an overview of, and introduction to, approaches and practical techniques for deriving meaningful calculations of ROI in training. However, using these techniques to calculate such returns is not always as straightforward as it first appears. It is for this reason that readers are urged to use such techniques in consultation with financial experts.

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Annotated **bibliography**

In this bibliography you will find abstracts of books and journals or magazine articles which deal with ROI in training. The great majority of these abstracts have been accessed via the Vocational Education and Training Research Database (VOCED). This annotated bibliography has been prepared by Lea-ann Harris, library technician for the National Clearinghouse of Vocational Education and Training. VOCED abstracts have been written by NCVER's Information Services and National Clearinghouse staff.

This bibliography is not meant to be exhaustive, but it represents a substantial number of articles and books that have been written on the subject.

Allen, Robert C 1999

***Education and the BC economy: Why spending more on education pays,* Western Research Network on Education and Training, Vancouver, Canada, 39pp.**

The long run of success of the British Columbia (BC) economy means that the population has been growing, and will continue to grow, faster than the rest of Canada. This paper establishes that the social rate of return to educational investment is very high in BC This result applies to high school, to most college and university programs, and to trade programs under some circumstances. BC has invested more heavily in these areas than other provinces in the 1990s, but much remains to be done. By comparisons with other provinces, this includes lowering the pupil–teacher ratio in elementary and secondary schools, increasing secondary school completion rates, and significantly expanding the university sector, particularly at third- and fourth-year undergraduate level. College and university graduates, in fact, pay far more than the cost of their education through the higher taxes they pay over their lifetimes.

The full text of this document is available at:
http://www.educ.ubc.ca/wrnet/wpseries.htm [accessed August 2000].

Barrett, Alan & Hovels, Ben 1998

'Towards a rate of return on training: Assessing the research on the benefits of employer-provided training', ***Vocational Training,*** **vol.II, no.14, May–August, pp.28–35, CEDEFOP, Greece.**

This article provides a review of research into the benefits of employer-provided training across large groups of workers or organisations. The ultimate purpose is to combine this information with estimates of the cost of training and to generate rates of return for various kinds of training. With this information, better decisions about training expenditure can be made.

Billett, Stephen 1995

'Cost–benefits of training: A Queensland study', ***Australian Vocational Education Review,*** **vol.2, no.1, pp.30–34, Griffith University, Nathan, Qld.**

This paper reports the findings of a study undertaken in Queensland to determine ways of judging the costs and benefits of training, and to discover how firms could make a return on their investment in training. The study failed to reveal any firm correlation between expenditure on training and direct returns.

Catts, Ralph et al. 1996

Validating training benefits in the workplace, **Vocational Education and Training Research Institute, University of Southern Queensland, Toowoomba, Qld., 115pp.**

This project focussed on the evidence of the value to small-to-medium enterprise (SME) owners of investing in staff training and on identifying and describing conditions under which a return on investment could be demonstrated. Researchers used a customer service model, based on these components: 'tangibles', 'reliability', and 'personal attention'. Studied were four retail businesses in southeast Queensland. Recommendations covered measures of productivity benefits, learner-centred training, and training models. Staff competencies identified by the four businesses were appended. This project was funded by the Australian National Training Authority (ANTA) Research Advisory Council. Client satisfaction and staff questionnaires are appended.

Collins, Gary 1998
'Returns from training for apprentices', ***Market for vocational education and training: Who pays and who profits,*** **Adelaide, 28–30 July 1997, NCVER, Adelaide, pp.396–405.**
In this paper the establishment of a workplace-based apprenticeship training program in the metals and engineering area is outlined. A company with many apprentices used an alternative approach, for example, a work-based training model for its apprentice training. The company workshops were registered as the provider. The role in the program of the Chamber of Commerce and Industry (CCI) of Western Australia is also explained.

Cosh, Andy, Hughes, Alan & Weeks, Melvyn 2000
The relationship between training and employment growth in small and medium-sized enterprises, **Centre for Business Research and Department of Applied Economics, University of Cambridge, UK, DfEE Publications, Nottingham, 32pp. (Research report, no.245).**
This report examines the impact of training on firm employment growth in small and medium-sized enterprises (SMEs). The report uses the methodological framework outlined in 'Methodological approaches to the study of the impact of training on firm performance' by Hughes and Weeks and an updated version of the Centre for Business Research's (CBR) SME dataset. A key objective of this study was to examine the relative benefit of utilising alternative measures of training activity on firm employment growth. The report concludes by exploring the implications of the findings of the study for further work in this area.

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Crowley-Bainton, Theresa 1999

***United Kingdom: Encouraging employer investment*, International Labour Office, Employment Sector, Training Policies and Systems Branch (POLFORM), ILO, Geneva, 19pp.**

Compared to its competitor nations, the skill base in the United Kingdom is low. A number of measures were introduced in the 1980s and 1990s to improve the skills and qualifications of the workforce. State training policy focusses on encouraging employers to invest in training, the provision of training for young people, and training for unemployed adults. This paper looks at the enterprise/State training partnerships where enterprises take the lead in providing training and the State in providing much of the funding.

This document may be found at:
http://www.ilo.org/public/english/employment/skills/training/publ/uk.htm [accessed March 2001].

Doucouliagos, Chris & Sgro, Pasquale 2000

***Enterprise return on a training investment*, NCVER, Adelaide, 60pp.**

This paper reports on a study intended to develop a training evaluation process to assist organisations in identifying the financial returns from training investment decisions. There are three main objectives of the study. The first objective is to present detailed examples or case studies of actual training programs undertaken by Australian organisations and to illustrate how training programs can be evaluated, what data are necessary for evaluation and what techniques can be applied as part of the evaluation process. The second objective is to quantify the net gains derived from training programs, including identifying the costs and benefits associated with training and determining the net financial impact of the training. The third objective is to develop a simple and practical process for training evaluation which should be general enough for use by most, if not all, organisations whether they are profit, non-profit or government-owned. The two main forms of data used are time series and matched pairs and pre- and post-training. In addition, both subjective and objective data are used in a number of the case studies, illustrating the diversity of data sources available to organisations and the use to which such data sources can be put. A four-step training evaluation process was developed, forming the basis of the methodology adopted in the study. The four steps are: (i) data collecting; (ii) comparison of pre- and post-training performance/behaviour; (iii) multi-variate analysis; (iv) comparison of the costs of the training to the benefits derived from the training, usually expressed as a

cost–benefit ratio and ROI. It is suggested that these steps be followed sequentially. The study has shown that a well designed and delivered training program can be expected to generate significant financial returns that compare quite favourably with other forms of investment.

The full text of this document may be found at: http://www.ncver.edu.au/research/proj8021.pdf [accessed November 2000].

Field, Jane 1999

'Evaluating training: If training is an investment then employers should be measuring the return on their investment in human resources', in proceedings of ILM Conference, *Skilling and the role of the firm*, The Robert Gordon University, Centre for International Labour Market Studies, Faculty of Management, Aberdeen, Scotland, 11–12 October, pp.386–395.

Human capital accounting is emerging as a key issue in government policy, and employers are encouraged to see education and training as an investment. However, if training is to be perceived as an investment, employers will want to evaluate the results of their investment using effective evaluation methods. This paper describes the outcomes from projects on Promoting Added Value through the Evaluation of training (PAVE), undertaken as part of the European Union's Leonardo da Vinci program. The PAVE project involved a transnational partnership of organisations from England, Finland, Germany, Ireland and Northern Ireland in examining how and why employers evaluate training and what resources they need to implement effective evaluation systems. The research and consultation process led to the creation of the PAVE Evaluation Resource Pack. The pack is a practical response to the growing recognition by government and employers of the value of human capital and the perception of education and training as an investment. It has been compiled to serve the training evaluation needs of a variety of employers and contains theory, a range of approaches, examples and frameworks to cater for different situations and a bibliography of further reading.

Foxon, Marguerite 1993

'Process approach to the transfer of training: Part 1: The impact of motivation and supervisor support on transfer maintenance', ***Australian Journal of Educational Technology,*** **vol.9, no.2, Summer, pp.130–143, AJET Publications, Canberra, ACT.**

This article examines the extent to which training transfers to other contexts. Transfer is explained in terms of a five-stage process. Initiation is described as the first stage, and unconscious maintenance is described as the final stage. Low motivation and limited supervisor support are discussed as factors that often inhibit transfer. The article proposes a model of training based on the identification of inhibiting and supporting factors.

The full text of this document is available at:
http://cleo.murdoch.edu.au/gen/aset/ajet/ajet9/su93p130.html
[accessed October 1999].

Gerada, Martin 2000

'Research report on the evaluation of select features of the Department of Defence Civilian Assessment System: October 1999', in ***9th Annual vocational education and training research conference,*** **North Coast Institute of TAFE, Coffs Harbour, New South Wales, 4–7 July, conference proceedings, NCVER, Adelaide, 30pp.**

This research report examines the Civilian Assessment System conducted by the Department of Defence. Gerada's work was conducted as part of his assignment for a unit within the Diploma in Training and Assessment System, and his interest in workplace assessment. It consists of an evaluation of the record keeping system, Assessor Network profile, and ROI.

The full text of this document may be found at:
http://www.ncver.edu.au/research/papers/downloads/gerada.rtf
[accessed November 2000].

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Goldwasser, Donna 2001

'Beyond ROI', *Training*, January, pp.82–90, Bill Communications, Minneapolis, Minn.

In today's economy, in addition to bringing benefits to the organisation, training is also expected to improve its own bottom line through cost savings over previously employed training methods. At the same time, measurement experts are beginning to question the validity of choosing a single metric to evaluate the success of training programs. This article discusses attempts by training professionals to quantify training's outcome.

Johnson, Kevin 2000

***Value for money: Comparative returns on investment in education and training*, Department of Training and Employment, Policy and Research, East Perth, WA, 30pp.**

This report draws on the findings from a statistical study of Australian Bureau of Statistics (ABS) Census 1996 data. The study was based on the principles of human capital theory and aimed to provide one perspective on the benefits accruing from participation in education or training. The report applies these principles to measure the ROI in vocational education and training (VET) and make comparisons with other forms of education such as a university degree.

There were two major result sections in the report: first, the graphical and tabular representation of incomes for individuals by level of qualification, age and other characteristics, and second, the statistical measure of the rate of return (the IRR).

The report concludes that any form of further education or training is a worthwhile commitment. It also shows that a qualification obtained through a technical and further education (TAFE) college, a private training provider or by way of an apprenticeship or traineeship stands up well against a university qualification.

Kostos, Carmel 1999

'Demonstrating training's impact on the bottom line', *Training and Development in Australia*, vol.26, no.6, December, pp.2–3, Australian Institute of Training and Development, Melbourne.

Many Australian organisations are reviewing and restructuring their training and learning function. Together with the shift to provide learning services that are more client focussed, there is a requirement to demonstrate the results of expenditure on training. Organisations are now showing an interest in measuring what has been learned in the training room against what follows through to the workplace. This brief article discusses the issue of ROI in training and briefly outlines how to implement a suitable training evaluation system.

McLendon, Emory, Catts, Ralph & Forlin, Chris 1996

'Testing the ROI principle', *Australian Training Review*, vol.19, June/July/August, pp.28–29.

Training programs are being judged according to whether they show a return on investment. The authors, who are commercial trainers, discuss: (1) the need to convince employers that staff require training in 'people skills' as well as in 'product or technical skills'; (2) the issues which arise among the employer, the training provider, and the funding agency when a training program is being negotiated.

Maglen, Leo, Hopkins, Sonnie & Burke, Gerald 2001

***Training for productivity: An exploration of a method of measuring the relationship between training expenditure by firms and their levels of productivity*, NCVER, Adelaide, 82pp. + appendices.**

This research study investigated a method to demonstrate that Australian enterprises that invest in the training of their employees gain a return from that investment through increased employee productivity. The research, using a case study approach, compares enterprise expenditure on training of personnel with labour productivity across a small group of enterprises producing similar products or providing similar services. Case studies were undertaken in four industries: footwear manufacture, wire products manufacture, the hotel industry and supermarkets, with between five and eight firms in each cluster located in cities in all States of Australia. Both qualitative and quantitative data were collected and analysed to test for a relationship between training investment and labour productivity. Conclusions were drawn about the effectiveness of the method used, and there are recommendations for the future.

This document may be found at:
http://www.ncver.edu.au/research/proj/nr8011.pdf [accessed June 2001].

Mellahi, Kamel 2000

'Human resource development through vocational education in Gulf Cooperation Countries: The case of Saudi Arabia', ***Journal of Vocational Education and Training,*** **vol.52, no.2, pp.329–344, Triangle Journals, Oxford, UK.**

This article investigates key issues in evaluating the effectiveness of vocational training in Saudi Arabia using a case study approach. Social values and labour market issues are considered to be inhibiting factors.

Moy, Janelle & McDonald, Rod 2000

Analysing enterprise returns on training, **NCVER, Adelaide, 22pp.**

This report into the return to enterprises on investment in training begins from the perspective that research evidence suggests that enterprise investment in training results in returns to the enterprise. Many enterprises, however, appear unwilling, unable or uninterested in evaluating these returns. It focusses on the complex factors that need to be considered by enterprises when analysing and maximising enterprise training investment decisions. These main areas were identified for consideration: conceptual and definitional issues; practical issues; approaches for classifying and selecting observable returns; drawing on related management approaches; and mediating factors that inhibit or enhance enterprise returns on training investment. The report also underpins the development of a practical guide designed to assist enterprises to identify, analyse and demonstrate evidence of returns on training investment.

The full text of this document may be found at:
http://www.ncver.edu.au/research/proj/nr8012.pdf [accessed March 2001].

OTFE (Office of Training and Further Education) 1997

***Return on training investment: Development of enterprise frameworks*, OTFE, Melbourne, 64pp.**

Making the right training investment decision is a critical part of the effective development of world-class, Australian enterprises. The development of decision-making and assessment frameworks for use by individual companies is critical. The project team for this report has developed a practical framework that enterprises can use to assess the returns on their investment in training and to inform enterprise decision-making with respect to training. The project team worked closely with several companies in order to test the framework and to report on some of their experiences in this document. The framework has been designed for use by training professionals, human resource development staff, and other company personnel who have an interest in the evaluation to determine the investment returns derived from training.

Phillips, Jack & Phillips, Patti 2000

'The return-on-investment process: Issues and trends', *Training*, vol.71, no.1, October, pp.8–12, Fenman, Ely, Cambridgeshire.

Organisations in the United Kingdom led the way in evaluating on-the-job behaviour change linked to training. The measurement focus has changed as many organisations around the world are seeking the business contribution of training, and one area where this is being aggressively pursued is the measurement of ROI. The current status and trends in measurement and evaluation are described, along with a process to show training's business contribution. This process, the ROI process, is being used by hundreds of organisations in 27 countries. It provides a balanced viewpoint of training effectiveness by developing six types of measure, providing a complete picture of training's contribution to the organisation. ROI calculations can be developed reliably and accurately for any type of training program in any organisation in any part of the world.

Robinson, Chris 2001

'Skills development—the critical investment for success', *Australian Training Review*, vol.37, Jan/Feb/Mar, p.2, NCVER, Adelaide.

In this editorial, Robinson voices his concern over employers looking at training as a cost rather than an investment. He points out that organisations where training is integrated into core business development strategies are the ones that can adapt quickly to changing market opportunities and are the ones most likely to succeed.

Rowden, Robert 1997

'How attention to employee satisfaction through training and development helps small business to maintain a competitive edge: A comparative case study', *Australian Vocational Education Review*, vol.4, no.2, October, pp.33–41.

This paper examines the role of training in enterprises and, in particular, its capacity to assist enterprises in maintaining a competitive edge. Focussing on small manufacturing enterprises, this study identifies a series of characteristics of successful and durable enterprises and then captures the role that training plays in those enterprises' activities. The six common characteristics include: (1) belief in people as the primary source of competitive advantage; (2) concern for employee well-being; (3) belief that investment in employee development yields a return; (4) meaningful employee involvement; (5) open communication channels; and (6) proactive leadership and direction from the top.

Schriver, Rob & Giles, Steve 1999

'Real ROI numbers', *Training and Development*, vol.53, no.8, August pp.51–52, 54–55, American Society for Training and Development, Alexandria, Va.

The nuclear industry is highly regulated, with strong requirements for employee training and qualification. Oak Ridge, Tennessee, with 14 000 employees, needs effective and efficient training programs. Changes to their training provision have improved training programs and reduced costs, leading to the implementation of web-based courses. In 1994, the Lockheed Martin Energy Systems Inc. Center for Continuing Education was appointed as the corporate university for the three Oak Ridge plants, offering consulting services such as analysing jobs, developing qualification programs, course materials, computer-based training and web-based training. In 1996, management decided that delivering courses through the organisation's intranet could make significant savings. For Oak Ridge, the benefits of intranet-delivered courses were numerous, with reduced time spent travelling to courses, faster training and total net savings of $1.5 million.

Smith, Andrew 2000

'Does training pay?', *Australian TAFE Teacher*, vol.34, no.2, Winter, p.29, Australian Education Union, Carlton, Vic.

This article briefly discusses the results of four research projects that examine the question of returns to training investments. The results showed that the returns to training are almost always positive, but they do differ significantly from one company to another. Returns to training investments are realised by firms in a variety of ways, many of which have a direct impact on the bottom line of the business but others of which are less easy to quantify and have a more long-term impact on the company's performance.

Smith, Andrew 2001

'Many happy returns', *Australian Training Review*, no.37, Jan/Feb/Mar, pp.8–9, NCVER, Adelaide.

This article outlines how businesses can make the most of their investments in training. Returns on investments in training include higher levels of value-added activities as a result of higher skill levels; greater flexibility in the range of tasks performed amongst employees; lower overhead costs through greater efficiency in the use of existing facilities; and a greater ability to innovate in terms of adopting new technology and introducing better forms of work organisation.

Steinke, Aden 1994

***Economic value of TAFE provision*, Planning and Evaluation Unit, NSW TAFE Commission, Sydney, 3 v.**

This study aimed to find out whether the benefits of ROI in VET could be quantified in dollar terms. An analytical model was modified to suit application to existing Australian data, the ABS (1990) survey of income and housing costs and amenities. The author suggests that the task of estimating the return from training investment would be enhanced if a longitudinal study were conducted of TAFE graduates. The two separate appendices contain the analyses of ABS data.

Winterton, Johnathan 1999

'Towards a practical model of labour retention', in proceedings of ILM Conference, *Skilling and the role of the firm*, The Robert Gordon University, Centre for International Labour Market Studies, Faculty of Management, Aberdeen, Scotland, 11–12 October, pp.498–515.

The major costs of labour turnover are training and development. Despite this fact, in human resource development (HRD) research labour retention receives little attention from researchers and practitioners compared with other issues. To establish an effective strategy for skill

formation, labour retention must be high enough for the average length of service to provide a return on HRD investment. The author points to the paradox that when faced with endemic high labour turnover, managers find it hard to justify HRD since there will be little return on their investment. Yet the lack of investment, in turn, contributes to low labour retention. The author stresses the need to establish initiatives that can reverse the situation and create a framework for training and development conducive both to promoting labour retention and delivering a return on HRD investment. There are three main reasons why employees leave work—retirement, dismissal or voluntary resignation. This paper focusses on voluntary separation, outlining a composite theory, developed from the literature, of labour retention. Applied to the UK clothing industry, which is experiencing a mean labour turnover rate of 27%, the voluntary separation model is intended to provide a basis for the development of best practice for labour retention. Three factors are highlighted as the key to labour retention—remuneration, working conditions and work organisation. The traditional approach views voluntary separation as a consequence of low job satisfaction combined with alternative opportunities and relative ease of movement to alternative employment. The author emphasises that organisations must foster conditions that maintain job satisfaction to secure employees. This paper provides a comprehensive overview of the literature relating to labour turnover and the competing theories of labour withdrawal, and proposes a simplified model of the process of voluntary separation.

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About the author

Josie Misko is a research fellow at NCVER and has extensive experience in the area of VET research and evaluation.

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